What is claimed is:

1. A program for enabling a computer to realize a matrix processing method of a parallel computer in which a plurality of processors and a plurality of nodes including memory are connected through a network, the method comprising:

distributing and allocating one combination of bundles of row blocks of a matrix, cyclically allocated, to each node in order to process the combination of the bundles;

separating a combination of bundles of blocks into a diagonal block, a column block under the diagonal block and other blocks;

redundantly allocating the diagonal block to each node and also allocating one of blocks obtained by one-dimensionally dividing the column block, to each of the plurality of nodes while communicating in parallel;

applying LU decomposition to both the diagonal block and the allocated block in parallel in each node while communicating among nodes; and

updating the other blocks of the matrix, using the LU-decomposed block.

2. The program according to claim 1, wherein

the LU decomposition is executed in parallel by each processor of each node in a recursive procedure.

3. The program according to claim 1, wherein in said update step, while computing a row block, each node transfers data that belongs to a computed block and is needed to update other blocks, to other nodes in parallel to the computation.

4. The program according to claim 1, wherein said parallel computer is a SMP node distributed-memory type parallel computer in which each node is a SMP (symmetric multi-processor).

5. A matrix processing device of a parallel computer in which a plurality of processors and a plurality of nodes including memory are connected through a network, comprising:

a first allocation unit distributing and allocating one combination of bundles of row blocks of a matrix, cyclically allocated, to each node in order to process the combination of the bundles;

a separation unit separating a combination of bundles of blocks into a diagonal block, a column block under the diagonal block and other blocks;

a second allocation unit redundantly allocating the diagonal block to each node and also allocating one of blocks obtained by one-dimensionally dividing the column block, to each of the plurality of nodes while communicating in parallel;

an LU decomposition unit applying LU decomposition to both the diagonal block and the allocated block in parallel in each node while communicating among nodes; and

an update unit updating the other blocks of the matrix using the LU-decomposed block.

6. A matrix processing method of a parallel computer in which a plurality of processors and a plurality of nodes including memory are connected through a network, comprising:

distributing and allocating one combination of bundles of row blocks of a matrix, cyclically allocated, to each node in order to process the combination of bundles of blocks;

separating a combination of bundles of blocks into a diagonal block, a column block under the diagonal block and other blocks;

redundantly allocating the diagonal block to each node and also allocating one of blocks obtained by

one-dimensionally dividing the column block, to each of the plurality of nodes while communicating in parallel;

applying LU decomposition to both the diagonal block and the allocated block in parallel in each node while communicating among nodes; and

updating the other blocks of the matrix, using the LU-decomposed block.

7. A computer-readable storage medium on which is recorded a program for enabling a computer to realize a matrix processing method of a parallel computer in which a plurality of processors and a plurality of nodes including memory are connected through a network, the method comprising:

distributing and allocating one combination of bundles of row blocks of a matrix, cyclically allocated, to each node in order to process the combination of the bundles;

separating a combination of bundles of blocks into a diagonal block, a column block under the diagonal block and other blocks;

redundantly allocating the diagonal block to each node and also allocating one of blocks obtained by one-dimensionally dividing the column block, to each of the plurality of nodes while communicating in parallel;

applying LU decomposition to both the diagonal block and the allocated block in parallel in each node while communicating among nodes; and

updating the other blocks of the matrix using the LU-decomposed block.